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DEC 14 2006

AMENDMENT TO THE CLAIMS

1. (Currently Amended) A hearing instrument system for detecting the insertion or removal of a hearing instrument into ~~a space~~ an ear canal of a hearing instrument user, the hearing instrument being configured to occlude the ear canal, comprising:

a first acoustic transducer configured to receive a first electrical signal and in response radiate acoustic energy;

first level detection circuitry coupled to the first acoustic transducer and operable to receive the first electrical signal and generate a first intensity signal;

a second acoustic transducer configured to receive radiated acoustic energy and in response generate a second electrical signal, the second acoustic transducer being a microphone that is positioned to receive radiated acoustic energy from inside of the occluded ear canal of the hearing instrument user;

second level detection circuitry coupled to the second acoustic transducer and operable to receive the second electrical signal and generate a second intensity signal; and

signal processing circuitry coupled to the first and second level detection circuitry and operable to receive the first and second intensity signals and compare the first and second intensity signals and determine whether the hearing instrument is inserted into the ~~space~~ ear canal or removed from the ~~space~~ ear canal based on the comparison.

2. (Original) The hearing instrument system of claim 1, wherein the first and second electrical signals received by the first and second level detection circuitry correspond to a stable band differential.

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3. (Original) The hearing instrument system of claim 2, wherein the stable band differential corresponds to a frequency band defining a lower frequency and an upper frequency, the upper frequency less than or equal to 10 kilohertz.

4. (Currently Amended) The hearing instrument system of claim 1, wherein the signal processing circuitry is further operable to reduce a gain associated with the first acoustic transducer upon detection that the hearing instrument is removed from the ~~space~~ ear canal.

5. (Currently Amended) The hearing instrument system of claim 4, wherein the signal processing circuitry is further operable to power off the hearing instrument if the signal processing circuitry does not detect an insertion into the ~~space~~ ear canal within a specified time period after the detection that the hearing instrument has been removed from the ~~space~~ ear canal.

6. (Currently Amended) The hearing instrument system of claim 4, wherein the signal processing circuitry is further operable to increase the gain associated with the first acoustic transducer upon detection that the hearing instrument is inserted into the ~~space~~ ear canal.

7. (Currently Amended) The hearing instrument system of claim 4, wherein the signal processing circuitry is further operable to increase the gain associated with the first acoustic transducer after a specified time period after the detection that the hearing instrument is inserted into the ~~space~~ ear canal.

8. (Currently Amended) The hearing instrument system of claim 1, wherein the signal processing circuitry is further operable to:

monitor the level of acoustic energy radiated by the first transducer over a frequency band;

monitor the level of acoustic energy received by the second acoustic transducer over a frequency band in response to the acoustic energy radiated by the first acoustic transducer when the hearing instrument is inserted into the ~~space~~ ear canal;

compare the level of acoustic energy received by the second acoustic transducer over a frequency band in response to the acoustic energy radiated by the first acoustic transducer to obtain first comparison data;

monitor the level of acoustic energy received by the second acoustic transducer over the frequency band in response to the acoustic energy radiated by the first acoustic transducer when the hearing instrument is removed from the ~~space~~ ear canal;

compare the level of acoustic energy radiated by the second acoustic transducer to the level of acoustic energy received by the first acoustic transducer over the frequency band when the hearing instrument is removed from the ~~space~~ ear canal to obtain second comparison data; and

identify stable band differentials between the first comparison data and the second comparison data for the monitoring insertion and removal events.

9. (Original) The hearing instrument system of claim 1, wherein the hearing instrument is a hearing aid.

10. (Original) The hearing instrument system of claim 1, wherein the hearing instrument is a communications device.

11. (Original) The hearing instrument system of claim 1, wherein the first and second level detection circuitry comprises first and second bandpass filters, respectively, and first and second level detectors, respectively.

12. (Currently Amended) An electronically-implemented method of determining whether a hearing instrument is removed from or inserted into ~~a space~~ an ear canal of a hearing instrument user, the hearing instrument being configured to occlude the ear canal, comprising:

monitoring the level of acoustic energy radiated by the hearing instrument;

monitoring the level of acoustic energy received by the hearing instrument in response to the acoustic energy radiated by the hearing instrument using a microphone that is positioned to receive acoustic energy from inside of the ear canal when the hearing instrument is inserted into the ear canal;

comparing the level of acoustic energy radiated by the hearing instrument to the level of acoustic energy received by the hearing instrument in response to the acoustic energy radiated by the hearing instrument; ~~and~~

determining whether the hearing instrument is inserted into the ~~space~~ ear canal or removed from the ~~space~~ ear canal based on the comparison[[.]]; and

controlling power consumption or acoustic gain of the hearing instrument based on the determination of whether the hearing instrument is inserted into the ear canal or removed from the ear canal.

13. (Original) The method of claim 12, wherein the monitoring steps comprise monitoring over a stable band differential.

14. (Original) The method of claim 13, wherein the stable band differential corresponds to a frequency band defining a lower frequency and an upper frequency, the upper frequency less than or equal to 10 kilohertz.

15. (Currently Amended) The method of claim 12, further comprising reducing a gain associated with the acoustic energy radiated by the hearing instrument upon detection that the hearing instrument is removed from the ~~space~~ ear canal.

16. (Currently Amended) The method of claim 15, further comprising powering off the hearing instrument if a determination that an insertion into the ~~space~~ ear canal does not occur within a specified time period after the detection that the hearing instrument has been removed from the ~~space~~ ear canal.

17. (Currently Amended) The method of claim 15, further comprising increasing the gain associated with acoustic energy radiated by the hearing instrument upon detection that the hearing instrument is inserted into the ~~space~~ ear canal.

18. (Currently Amended) The method of claim 15, further comprising increasing the gain associated with acoustic energy radiated by the hearing instrument after a specified time period after the detection that the hearing instrument is inserted into the ~~space~~ ear canal.

19. (Currently Amended) The method of claim 12, further comprising:

monitoring the level of acoustic energy radiated by the hearing instrument over a frequency band;

monitoring the level of acoustic energy received by the hearing instrument over the frequency band in response to the acoustic energy radiated by the hearing instrument when the hearing instrument is inserted into the ~~space~~ ear canal;

comparing the level of acoustic energy radiated by the hearing instrument to the level of acoustic energy received by the hearing instrument over the frequency band when the hearing instrument is inserted into the ~~space~~ ear canal to obtain first comparison data;

monitoring the level of acoustic energy received by the hearing instrument over the frequency band in response to the acoustic energy radiated by the hearing instrument when the hearing instrument is removed from the ~~space~~ ear canal;

comparing the level of acoustic energy radiated by the hearing instrument to the level of acoustic energy received by the hearing instrument over the frequency band when the hearing instrument is removed from the ~~space~~ ear canal to obtain second comparison data; and

identifying stable band differentials between the first comparison data and the second comparison data for the monitoring insertion and removal events.

20. (Currently Amended) A hearing instrument that is configured to occlude an ear canal of a hearing instrument user, comprising:

means for monitoring the level of acoustic energy radiated by the hearing instrument;

a microphone that is positioned to receive acoustic energy from inside of the occluded ear canal of the hearing instrument user and to monitor ~~means for monitoring~~ the level of acoustic energy received by the hearing instrument in response to the acoustic energy radiated by the hearing instrument; and

means for comparing the level of acoustic energy radiated by the hearing instrument to the level of acoustic energy received by the hearing instrument in response to the acoustic energy radiated by the hearing instrument and for determining whether the hearing instrument system is inserted into the space or removed from the space based on the comparison.

21. (Currently Amended) A method of determining whether a hearing instrument is removed from or inserted into ~~a space~~ an ear canal of a hearing instrument user, the hearing instrument being configured to occlude the ear canal when inserted, comprising:

monitoring the level of acoustic energy radiated by the hearing instrument over a frequency band;

monitoring the level of acoustic energy received by the hearing instrument over the frequency band in response to the acoustic energy radiated by the hearing instrument when the hearing instrument is inserted into the ~~space~~ ear canal using a microphone that is positioned to receive acoustic energy from inside of the occluded ear canal;

comparing the level of acoustic energy radiated by the hearing instrument to the level of acoustic energy received by the hearing instrument over the frequency band when the hearing instrument is inserted into the ~~space~~ ear canal to obtain first comparison data;

monitoring the level of acoustic energy received by the hearing instrument over the frequency band in response to the acoustic energy radiated by the hearing instrument when the hearing instrument is removed from the ~~space~~ ear canal;

comparing the level of acoustic energy radiated by the hearing instrument to the level of acoustic energy received by the hearing instrument over the frequency band when the hearing instrument is removed from the ~~space~~ ear canal to obtain second comparison data; ~~and~~

identifying stable band differentials between the first comparison data and the second comparison data for the monitoring insertion and removal events[[.]]; and

controlling at least one of power consumption or acoustic gain based on the determination of whether the hearing instrument is removed from or inserted into the ear canal

22. (Original) The method of claim 21, wherein identifying stable band differentials between the first comparison data and the second comparison data for the monitoring insertion and removal events comprises:

obtaining a ratio of the first comparison data to the second comparison data; and

determining if the change in ratio over a bandwidth is within a defined range.

23. (Original) The method of claim 21, wherein the frequency band defines a lower frequency and an upper frequency, the upper frequency less than or equal to 10 kilohertz.

24. (Currently Amended) A hearing instrument system for determining a hearing instrument seal with a user's ear, comprising:

a first acoustic transducer configured to receive a first electrical signal and in response radiate acoustic energy;

first level detection circuitry coupled to the first acoustic transducer and operable to receive the first electrical signal and generate a first intensity signal;

a second acoustic transducer configured to receive radiated acoustic energy and in response generate a second electrical signal, the second acoustic transducer including a microphone that is positioned to receive radiated acoustic energy from inside of the user's sealed ear;

second level detection circuitry coupled to the second acoustic transducer and operable to receive the second electrical signal and generate a second intensity signal; and

signal processing circuitry coupled to the first and second level detection circuitry and operable to receive the first and second intensity signals and compare a ratio of the first and second intensity signals to a baseline ratio of the first and second intensity signals to determine whether the hearing instrument has formed an acceptable seal with the user's ear.

25. (Original) The hearing instrument system of claim 24, wherein the signal processing circuitry is operable to determine whether the hearing instrument has formed an acceptable seal with the user's ear by determining whether the ratio of the first and second intensity signals is within a threshold level of the baseline ratio over a frequency band.

25B. Cancelled.

26. (Currently Amended) The hearing instrument system of ~~claim 24~~ claim 25, wherein the threshold level varies over the frequency band.

27. (Original) The hearing instrument system of claim 24, wherein the signal processing circuitry is operable to cause the first acoustic transducer to periodically radiate a notification tone upon determining that the hearing instrument has not formed an acceptable seal with the user's ear.

28. (Original) The hearing instrument system of claim 24, wherein the hearing instrument is a hearing aid.

29. (Currently Amended) A method of determining whether a hearing instrument forms an acceptable seal with a user's ear, comprising:

obtaining a baseline frequency response of the hearing instrument configured in an acceptable seal;

obtaining ~~a~~ an actual frequency response of the hearing instrument configured with the user's ear using a microphone that is positioned to receive acoustic signals from inside of the user's sealed ear;

comparing the baseline frequency response to the actual frequency response over a low frequency band;

determining whether the actual frequency response is within a threshold level of the baseline frequency response over the low frequency band;

associating an acceptable seal with a determination that the actual frequency response is within a threshold level of the baseline frequency response over the low frequency band; ~~and~~

associating an unacceptable seal with a determination that the actual frequency response is not within a threshold level of the baseline frequency response over the low frequency band[[.]]; and

generating an indication of whether the seal in acceptable or unacceptable.

30. (Original) The method of claim 29, wherein the threshold level is constant over the low frequency band.

31. (Original) The method of claim 29, wherein the threshold level varies over the low frequency band.

32. (New) The hearing instrument system of claim 25, wherein the threshold level is constant over the frequency band.